REMARKS/ARGUMENTS

Claim 7 stands rejected by the Examiner under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to point out and distinctly claim the subject matter which the applicants regard as their invention. In response to the Examiner's objection to the specification, applicants have amended claim 7 in order to more particularly point out and distinctly claim the subject matter which the applicant regards as the invention. More particularly, the phrase "the minimum delay for each packet size" in line 2 has been changed to read "a minimum delay for each packet size" per the suggestion of the Examiner.

Applicants disagree that the amendment to the specification submitted on January 3, 2005 were not in compliance with 37 CFR 1.121. The addition to the paragraph on page 5 was underlined per the statute. "L" was changed to "L3" in two places in that paragraph and in both cases the additional "3" was underlined in the prior amendment. With regard to the amendment on page 12 of the specification the word "is" was deleted with a strikethrough. No other changes were made. Applicants have resubmitted these changes (now deleting each "L" and replacing it with "L3") and have bolded the changes to make them easier to find.

The Examiner has rejected claims 1-2, 8-11 and 17 under 35 U.S.C. §103(a) as being unpatentable over United States Patent No. 6,201,791 to Bournas ("Bournas") further in view of United States Patent No. 6,076,113 to Ramanathan et al. ("Ramanathan").

With respect to claim 1 the Examiner states that Bournas does not explicitly teach the sending of packets from the remote host to the first and second nodes as required by the independent claims at issue. The Examiner uses Ramanathan to overcome this deficiency.

Applicants disagree that Bournas and Ramanathan, alone or in combination, teach or suggest the presently claimed invention particularly as the claims have been presently amended.

Bournas discloses a method and apparatus for estimating the idle capacity of a network channel between a source node and a destination node of a communications network. Packets are generated at and transmitted from a source node to a destination node. The initial window size is set at two packets. The idle capacity of the channel is calculated based on round-trip-time for transmission of the packets and an optimal window size is estimated. This optimal window size is used in the next iteration until the process converges and the idle capacity is estimated.

Ramanathan discloses a method of evaluating the user-perceived performance of the network connection used by the user. A throughput measurement system 100 sends packets through interconnect network 34 to a test target 42 or one of a plurality of users 12, 14, and 16

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in order to measure the performance of the network connection over time. The test packets are sent directly from router 24 to the destination or target and back.

Neither Bournas nor Ramanathan, alone or in combination, teach or suggest such remote estimation of bandwidth using randomly sized data packets. In independent claims 1, 11 and 17 of the present invention it is clear that the packets are generated at a remote host and not at either the first node or second node in a network. In Ramanathan data is sent from the throughput measurement system directly to the target. In contrast to both Bournas and Ramanathan, in the present system data is sent from the remote measurement system to a first node. The packets are acknowledged and data is gathered on the delay. The same size packets are also sent to a second node by way of the first node and data is gathered on the delay as those packets are returned or acknowledged. Independent claims 1, 11 and 17 have been amended to more distinctly claim this feature of the present invention. Support for this amendment can be found at page 5, lines 13-25 of the specification.

Furthermore, the present invention requires and claims the generating and sending of a plurality of randomly-sized data packet pairs in order to reduce the effect of packet-size dependent delay. This is neither taught nor suggested by Bournas nor Ramanathan. The applicants can find no mention of use of randomly-sized data packets in either reference. In Bournas, N test packets are transmitted. There is no mention of randomly varying the size of the test packets. Furthermore, there is no teaching of using randomly sized test packets in Ramanathan either. Applicants contend that Bournas and Ramanathan do not make claims 1, 11 and 17 obvious for at least these two reasons and, therefore, Bournas and Ramanathan do not make any of the dependent claims obvious either.

The Examiner has rejected claim 3 under 35 U.S.C. 103(a) as being unpatentable over Bournas and Ramanathan further in view of Kratz. Applicants contend that Kratz (as described by the Examiner) does not teach or suggest the generation or transmission of randomly sized data packets from a remote location in order to remotely estimate bandwidth between two nodes in a communications network. Kratz cannot, therefore, overcome the deficiencies in Bournas and Ramanathan and claim 3, as well as, independent claims 1, 11 and 17 are neither taught nor suggested by Kratz, alone, or in combination with Bournas and Ramanathan. Additionally, there is no teaching to suggest combining these three references.

The Examiner has also rejected claim 4 under 35 U.S.C. §103(a) as being unpatentable over Bournas and Ramanathan further in view of Malakoff. Malakoff appears to be a general discussion of the use of Bayesian analysis. Applicants contend that Malakoff does not teach or suggest the generation or transmission of randomly sized data packets from a remote location in order to remotely estimate bandwidth between two nodes in a

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communications network. Malakoff cannot, therefore, overcome the deficiencies in Boumas
and Ramanathan discussed above and claim 4, as well as, independent claims 1, 11 and 17 are
neither taught nor suggested by Malakoff, alone, or in combination with Boumas and
Ramanathan. Additionally, there is no teaching that would suggest the combination of
references set forth by the Examiner.

The Examiner has also rejected claims 5 and 6 under 35 U.S.C. §103(a) as being
unpatentable over Boumas and Malakoff further in view of United States Patent No.
6,115,718 to Huberman et al. Huberman et al. discloses a method for predicting document
access in a collection of linked documents. Huberman is not related art and the proposed
combination is highly suspect. Applicants contend that Huberman et al. does not teach or
suggest the generation or transmission of randomly sized data packets from a remote location
in order to remotely estimate bandwidth between two nodes in a communications network.
Huberman cannot, therefore, overcome the deficiencies in Boumas (or Boumas and
Ramanathan) and claims 5 and 6, as well as, independent claims 1, 11 and 17 are neither
taught nor suggested by Huberman, alone, or in combination with Boumas and/or
Ramanathan or Malakoff.

The Examiner has also rejected claim 7 under 35 U.S.C. §103(a) as being
unpatentable over Boumas and Ramanathan further in view of United States Patent No.
5,477,531 to McKee et al. McKee et al. is directed to a means for testing communications
between two stations by sending a test packet from the first station to the second. Applicants
contend that McKee et al. does not teach or suggest the generation or transmission of
randomly sized data packets from a remote location in order to remotely estimate bandwidth
between two nodes in a communications network. McKee et al. cannot, therefore, overcome
the deficiencies in Boumas and Ramanathan and claim 7, as well as, independent claims 1, 11
and 17 are neither taught nor suggested by McKee et al., alone, or in combination with
Boumas.

The Examiner has also rejected claim 12 under 35 U.S.C. §103(a) as being
unpatentable over Boumas in view of Kahkoska further in view of United States Patent No.
6,285,972 (Barber). Barber is not related to the present application. Barber discloses a
system for generating an improved nonlinear system model. There is no connection between
this and the remote estimation of bandwidth in a communications network. Applicants
contend that Barber does not teach or suggest the generation or transmission of randomly-
sized data packets from a remote location in order to remotely estimate bandwidth between
two nodes in a communications network. Barber cannot, therefore, overcome the deficiencies
in the primary references of Boumas Ramanathan and claim 12, as well as, independent

claims 1, 11 and 17 are neither taught nor suggested by Barber, alone, or in combination with Boumas, Ramanathan and/or Kahkoska. The combination of so many unrelated patents is also impermissible.

The Examiner has also rejected claim 13 under 35 U.S.C. §103(a) as being unpatentable over Boumas and Ramanathan in view of Kahkoska and Barber, further in view of Huberman et al. Applicants contend that none of these references, even if they could be combined, teach or suggest the generation or transmission of randomly sized data packets from a remote location in order to remotely estimate bandwidth between two nodes in a communications network. Claim 13, as well as, independent claims 1, 11 and 17 are neither taught nor suggested by any of these myriad references, alone, or in combination with one another.

The Examiner has rejected claims 14 and 15 under 35 U.S.C. 103(a) as being unpatentable over Boumas and Ramanathan as applied to claim 11 further in view of Office Notice that both the concept and the advantages of calculating the available bandwidth using Bayesian point estimates and mean traffic rates are well known and expected in the art. This argument, however, does not overcome the deficiencies pointed out above in the primary references. With respect to claim 15, Huberman does not overcome the same deficiencies as pointed out above.

The Examiner has also rejected claim 16 under 35 U.S.C. §103(a) as being unpatentable over Boumas and Ramanathan further in view of United States Patent No. 6,483,805 (Davies et al.). Applicants contend that Davies does not teach or suggest the generation or transmission of randomly sized data packets from a remote location in order to remotely estimate bandwidth between two nodes in a communications network. Davies cannot, therefore, overcome the deficiencies in Boumas and Ramanathan and claim 16, as well as, independent claims 1, 11 and 17 are neither taught nor suggested by Davies, alone, or in combination with Boumas. Furthermore, Davies does not teach or suggest the estimation of a traffic and router characteristic parameter (γ) as disclosed in the specification of the present application.

The Examiner has also rejected claims 18, 19 and 20 under 35 U.S.C. §103(a) as being unpatentable over Boumas further in view of United States Patent No. 6,002,671 to Kahkoska et al. Kahkoska et al. discloses a method for testing ADSL (digital subscriber line) circuits by connecting a test instrument at a customer premises (i.e., home or office) and connecting another test instrument at the central office connected to the customer premises by twisted pair telephone line. First, applicants would like to note that the subject matter of Kahkoska et al. is directed to coupling test instruments through DSL. Applicants contend that

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Kahkoska et al. does not teach or suggest the generation or transmission of randomly sized data packets from a remote location in order to remotely estimate bandwidth between two nodes in a communications network. Kahkoska et al. cannot, therefore, overcome the deficiencies in Bournas and Ramanathan and, therefore, claims 18 19 and 20, as well as the independent claims 1, 11 and 17, are neither taught nor suggested by Kahkoska, alone, or in combination with Bournas. Furthermore, applicants contend that Kahkoska does nor teach or suggest the generation of a known quantity of traffic at a location remote from the host that is responsible for generating the plurality of randomly sized data packets. There is no discussion in Kahkoska of any hardware remote from the two test instruments that are used to communicate and test a DSL line.

Bournas do not teach or suggest applicants' novel methods and systems alone or in combination as set forth in amended claims 1-20, applicants submit that these claims are clearly allowable. Favorable reconsideration and allowance of these claims are therefore requested.

Applicants earnestly believe that this application is now in condition to be passed to issue, and such action is also respectfully requested. However, if the Examiner deems it would in any way facilitate the prosecution of this application, he is invited to telephone applicants' agent at the number given below.

A petition for a two-month extension of time is enclosed herewith.

Respectfully submitted,
Telcordia Technologies, Inc.

By: _____

William A. Schoneman
Reg. No. 38,047
Tel.: (732) 699-3050

Telcordia Technologies, Inc.
One Telcordia Drive
Piscataway, NJ 08854-4157

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